

# The Moon's Mysterious Water

Why do scientists think that there is water on the Moon? Where should we go to search for this water? Your mission today is to investigate these questions!

In the last 60 years, many spacecraft have journeyed from Earth to the Moon. Photographs and measurements sent back by these spacecraft help us here on Earth to make maps of the Moon, which we can use to decide where to explore. Today, you will be using some of these maps to decide where we should go to search for water on the Moon.

How can we find out which places are most likely to have water? Here are some clues:

**Clue 1:** Remember that we are looking for frozen water (ice). Just like on Earth, ice can only be found in places on the Moon where it is very cold.

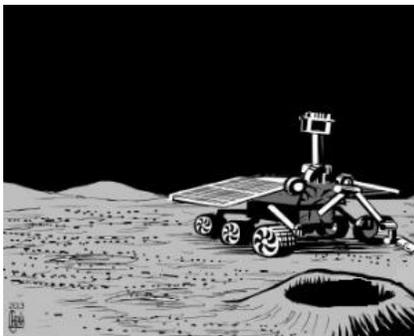
**Clue 2:** Water is made up of hydrogen and oxygen. Some spacecraft, like Lunar Prospector, have instruments that can measure how much hydrogen is trapped in the ground. Places with more hydrogen are more likely to have water.

Ready?

Let's start by looking at Map 1 and Map 2 side by side. Map 1 was made from photographs of the South Pole of the Moon, and Map 2 shows us how cold or warm the lunar surface is. Remember Clue 1? Find three spots that are very cold (purple/blue on Map 2) and mark them on Map 1 using purple stickers.

Now, compare Map 1 and Map 3. Map 3 shows us how much hydrogen is buried under the lunar surface. Remember Clue 2? Find three spots that have more hydrogen (purple/blue on Map 3) and mark them on Map 1 using blue stickers. You might find that some of these spots already have a purple sticker.

When you're done, take a good look at Map 1. Do you see any spots that have both a purple sticker and a blue sticker? These are places that are very cold and have more hydrogen. Aha! Based on Clues 1 and 2, these seem like the places that are most likely to have water.



Imagine that you are sending a rover to search for water on the Moon. Where would you send it? Choose a spot and mark it with a gold star.

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Some more questions to think and talk about:

1. Look at the cold spots that you marked with purple stickers. Are they in the sunlight (gray/white) or in shadow (black)?
2. Did you notice that craters on the Moon have names (Map 1)? What are they named after?
3. Look at Map 2 again. Do you notice that there are some warm, sunny spots (red/yellow) right next to icy cold spots (blue/purple)? Can this strange situation exist on Earth?